

Application Number 10/573,239  
Amendment dated September 8, 2008  
Response to Office action of July 18, 2008

**Amendments to the Drawings:**

The attached sheets of drawings include changes to Figs 1B and 1C. These sheets include Figs 1A-C and replace the earlier sheet including Figs 1 A-C.

Attachment: Replacement Sheets  
Annotated Sheets Showing changes

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### **Remarks/Arguments**

#### **Objections to the Drawings**

Applicant has amended the location of numerals 104 and 110 in Figure 1B and has replaced numeral 104 in Figure 1C by numeral 112 as required by Examiner. No new material is added by these amendments.

#### **Objections to the Specification**

Applicant has amended paragraph [0018] in accordance with Examiner's requirement.

#### **Objections to the claims**

Applicant has amended claims 1 and 12 in accordance with Examiner's requirement.

#### **Claim Rejections – 35 USC 112**

Claim 12 stands rejected under 35 USC 112 as containing indistinct language as well as a phrase with insufficient antecedent basis. Applicant has amended this claim in accordance with Examiner's requirement.

#### **Claims Rejections – 35 USC 102(b)**

#### **Rejections of claims 1-3, 5, 10-14, 16 and 21 under 35 USC 102(b) as being anticipated by COX**

Claims 1-3, 5, 10-14, 16 and 21 stand rejected under 35 USC 102(b) as being anticipated by Cox (6,064,137).

To anticipate a claim, the prior art reference must teach every aspect of the claim. Furthermore the alleged identical invention must show in as complete detail as is shown in the supposedly anticipated claim.

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Cox teaches two electrodes (a cathode 4 and an anode 8) both coated with diamond or carbon-like diamond material (6), and separated from each other by means of spacers (8), and, in Figure 5, having an insulating film 30.

In claims 1, 3, 5 and 10-14 of the present invention, only the collector electrode (anode) comprises a band-gap material. The emitter electrode comprises a metal. Since Cox requires a diamond material coating on both electrodes whereas the present invention, as recited in claims 1, 3, 5, 10-14 and 16 has a band-gap material on one electrode only, the present invention is capable of functioning with fewer elements than the prior art and is therefore distinguishable over the prior art. Claims 1, 12 and 13 have been amended to more clearly distinguish this aspect of the present invention over the prior art.

Furthermore, it can be seen from Figures 1, 1A, 3 and 3B of the present invention, and the associated descriptive text, that the emitter and collector are separated by a gap which does not contain any solid state material, such as spacers as in the prior art of Cox, but rather is filled only with an inert gas at low pressure or is evacuated. Applicant has amended claims 1, 12 and 13 in order to more clearly distinguish this aspect of the present invention over the prior art.

Furthermore, regarding claims 1 and 5, Cox's anode comprises a diamond or diamond like material placed on top of a conductive anode (Col. 8, lines 49-50). Cox specifies that 'the body of the anode is a conductive plate' (Col. 10, line 44). Cox's anode comprises an additional metal base layer in comparison to the collector or anode of the present invention which can function comprising a band gap material alone. Claim 1 has been amended in order to more clearly distinguish this aspect of the present invention over the prior art.

In view of the amendment made to Claims 1, 12 and 13 and the arguments above, Applicant suggests that Cox does not anticipate the current invention and Applicant therefore respectfully requests that Examiner withdraw his rejection of claims 1-3, 5, 10-14, 16 and 21 under 35 USC 102(b).

**Rejections of claims 1, 3 -6, 10-17 under 35 USC 102(b) as being anticipated by BELL**

Claims 1, 3-6, 10-17 are rejected under 35 USC 102(b) as being anticipated by Bell (4,280,074).

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To anticipate a claim, the prior art reference must teach every aspect of the claim. Furthermore the alleged identical invention must show in as complete detail as is shown in the supposedly anticipated claim.

Bell teaches two electrodes, an emitter 35 and a collector 36, in which the collector is coated with a composite layer comprising: a heavily-doped p-type semiconductor layer 25 exposed at the surface to a work function lowering activator, such as a cesium vapor; n-type semiconductor layer 26; and heavily doped n+ contact region 27 formed on metal 28. On top of the composite layer is a topside contact 47. Furthermore, the p-n junction is maintained in a forward biased condition (see abstract).

In claims 1, 3-6 and 10-17 of the present invention, the collector electrode does not comprise a cesiated layer. This is made clear by the amendments to claims 1, 12 and 13 in which the collector electrode is recited as consisting of a band gap material, which clearly precludes it consisting of a cesiated layer which is metallic.

In view of this argument and the amendments made to claims 1, 12 and 13 Applicant respectfully suggests that Bell does not anticipate the present invention in claims 1, 3-6 and 10-17. Applicant therefore respectfully requests that Examiner withdraw his rejection of these claims under 35 USC 102 (b).

#### **Claims Rejections – 35 USC 103(a)**

Claims 7, 8, 18 and 19 stand rejected under 35 USC 103 as being unpatentable over Cox (6, 064, 137) in view of Tavkhelidze et. al. (6,417,060). In view of the amendments made to claim 1, 12 and 13 and the corresponding arguments above, Applicant believes that claims 7, 8, 18 and 19 are patentable over the prior art of Cox in view of Tavkhelidze due to the significant differences between Cox's invention and the current invention.

Furthermore .....

Claims 7, 8, 18 and 19 stand rejected under 35 USC 103 as being unpatentable over Bell (4, 280, 074) in view of Tavkhelidze et. al. (6,417,060). In view of the arguments above, Applicant believes that claims 7, 8, 18 and 19 are patentable over the prior art of Bell in view of

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Tavkhelidze due to the significant differences between Bell's collector electrode and the collector electrode of the current invention.

**Double Patenting**

Applicant will timely file a terminal disclaimer should claims 1-9 and 11-15 of copending Application No. 11/392,182 be patented before claims 1-20 of the present application.

Applicant respectfully submits that this application, as amended, is in condition for allowance, and such disposition is earnestly solicited. No new material has been added by these amendments. If the Examiner believes that discussing the application the Applicant over the telephone might advance prosecution, Applicant would welcome the opportunity to do so.

Respectfully submitted,

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